Forecasting Air Pollution Emissions from Agricultural Operations in the San Joaquin Valley

Background

For air quality plans and other needs, it is important to understand how air pollution from agricultural activities varies over time within California. By understanding these changes, 'growth surrogates' can be developed to estimate the increases or decreases in air pollution from agricultural activities over time. These surrogates can also then be uniformly applied to similar agricultural activities to ensure consistency in growth assumptions and forecasts of air pollution emissions.

Development of Growth Surrogate Options for the San Joaquin Valley

On February 19, 2003, the Emission Inventory Subcommittee of the California Air Resources Board Agriculture Advisory Committee for Air Quality met to discuss a proposal from ARB staff (*Issue Paper: Agricultural Growth Forecast Discussion for the 2/19 Emission Inventory Subcommittee Meeting*) to use irrigated agricultural acreage projections as the basis for forecasting air pollution from a variety of agricultural operations in the San Joaquin Valley. The agricultural operations include such activities as farm equipment, agricultural burning, agricultural pumps, pesticides, and harvesting and land preparation. The irrigated agricultural acreage projections are based on the Department of Water Resources Board's Bulletin 160-98 for the San Joaquin River region (San Joaquin River and Tulare Lake hydrologic regions). In addition to DWR's projections, two land retirement programs were chosen to be reflected in the suggested growth surrogate: CALFED (a federal program for ecosystem restoration and water quality) and the Westlands Water District land retirement programs.

<u>Irrigated Agricultural Land Retirement Programs in the San Joaquin Valley</u>

- Westlands Water District
  Currently 45,000 acres are slated for retirement between now and 2020 due to drainage problems (this acreage is already included in the DWR Bulletin 160-98 projection). Maximum potential retirement is 200,000 acres per the Westlands water district.
- CALFED (final Programmatic EIS/EIR)
  Up to 42,800 acres farmland may be acquired in the San Joaquin River region from 2000 to 2030 due to ecosystem restoration and water quality programs.

<u>Potential Agricultural Acreage Growth Scenarios for the San Joaquin Valley</u>

The baseline DWR projections include 45,000 acres of farmland retirement due to drainage related problems. However, they do not include the full 200,000 acres in the Westlands water district slated for retirement due to drainage

problems (an additional 155,000 acres). In addition, depending on funding, CALFED estimates that 42,800 acres of farmland could be retired due to ecosystem restoration programs, which are not in the baseline DWR projections.

The baseline DWR projection is the low range of irrigated agricultural acreage decrease. The high-end growth assumption starts with the baseline DWR projection and includes all of the potential Westlands and CALFED land retirements (155,000 plus 42,800 acres). Using the baseline DWR projections, the irrigated agricultural acreage growth rate is -0.17% per year. Applying the additional land retirements, the growth rate would be -0.33% per year.

	1995	2020 Projection			Changes	
Scenario	**DWR Acreage 1995**	**DWR Acreage 2020**	**Additional land retirement, Westlands**	**Converted Farmland, CALFED**	**Acreage**	**Annual Growth**
Low	5,132,000	4,920,000 (Includes 45,000 acres retired land)	0	0	-212,000	-0.17%
High			155,000	42,800	-409,800	-0.33%

Selection of the New Growth Surrogate

After careful consideration, the Emission Inventory Subcommittee agreed upon a –0.3% per year decline in irrigated agricultural lands in the San Joaquin Valley between 1990 and 2020 for use in estimating emissions from agricultural operations.

Future Steps

ARB staff will develop growth factors to be used statewide to forecast air pollution from a variety of agricultural operations based upon the DWR Bulletin 160-98 series and present the findings to the Emission Inventory Subcommittee. DWR updates the Bulletin 160 series every five years and a new Bulletin is due to be released this year. The ARB staff recognizes that agricultural activities are dynamic due to economic considerations and other variables and that the growth projections need to be updated in concert with the Bulletin 160 series updates.

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